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THE
HARVARD SCHOOL OF PUBLIC HEALTH

55 VAN DYKE STREET, BOSTON, MASS

1927-28

PUBLISHED BY HARVARD UNIVERSITY

BUILDING OF THE SCHOOL OF PUBLIC HEALTH

Buildings of the Harvard Medical School and of the Children's Hospital shown in the background

ANNOUNCEMENT

OF THE

HARVARD SCHOOL OF PUBLIC HEALTH

55 VAN DYKE STREET, BOSTON, MASS.

OF

HARVARD UNIVERSITY

FOR

1927-28

PUBLISHED BY HARVARD UNIVERSITY

1927

JULY

Su	Mo	Tu	W	Th	Fr	Sa
..	..	..	..	..	1	2
3	*(4)*	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	..	..	..	..	..	..

AUGUST

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7	8	9	10	11	12	13
14	15	16	17	18	19	20
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SEPTEMBER

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OCTOBER

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NOVEMBER

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DECEMBER

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1928

JANUARY

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APRIL

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JUNE

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JULY

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AUGUST

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SEPTEMBER

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OCTOBER

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NOVEMBER

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18	19	20	21	22	23	24
24	26	27	28	*(29)*	30	..
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DECEMBER

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9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	*(25)*	26	27	28	29
29	30	..	..	..	..	..

CONTENTS

CALENDAR

1927

Sept. 26, Monday.	ACADEMIC YEAR BEGINS. Registration of students. Payment of the first instalment of the tuition fee is required on this date.
Oct. 12, Wednesday.	Columbus Day: a holiday.
Nov. 24, Thursday.	Thanksgiving Day: a holiday.
Nov. 30, Wednesday.	Payment of the second instalment of the tuition fee is required on or before this date.
Dec. 15, Thursday.	Last day for receiving theses for February degrees.

RECESS FROM DEC. 23, 1927, TO JAN. 2, 1928, INCLUSIVE

1928

Jan. 2, Monday.	New Year's Day: a holiday.
Jan. 30, Monday.	Payment of the third instalment of the tuition fee is required on or before this date.
Jan. 30, Monday.	SECOND HALF-YEAR BEGINS.
Feb. 22, Wednesday.	Washington's Birthday: a holiday.
April 16, Monday.	Last day for receiving theses for June degrees.

RECESS FROM APRIL 8 TO APRIL 14, INCLUSIVE

April 30, Monday.	Payment of the fourth instalment of the tuition fee is required on or before this date.
May 30, Wednesday.	Memorial Day: a holiday.
June 21, Thursday.	COMMENCEMENT.

SUMMER VACATION, FROM COMMENCEMENT TO SEPTEMBER 23, INCLUSIVE

In order to insure equal periods of time for the various courses, the following division of the academic year has been arbitrarily made:

Mon. Sept. 26–Sat. Oct. 22	OCTOBER
Mon. Oct. 24–Sat. Nov. 19	NOVEMBER
Mon. Nov. 21–Thurs. Dec. 22	DECEMBER [1]
Tues. Jan. 3–Sat. Jan. 28	JANUARY
Mon. Jan. 30–Sat. Feb. 25	FEBRUARY
Mon. Feb. 27–Sat. Mar. 24	MARCH
Mon. Mar. 26–Sat. April 28	APRIL [2]
Mon. April 30–Sat. May 26	MAY

[1] Christmas vacation from Dec. 23, 1927, to Jan. 2, 1928, inclusive.

[2] Spring recess from April 8 to April 14, 1928, inclusive.

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THE HARVARD SCHOOL OF PUBLIC HEALTH

HISTORICAL STATEMENT

The Harvard School of Public Health first gave instruction to students in the academic year 1922–23. For many years activity in public health had been rapidly increasing in Harvard University. The influence of the University upon public health, through the pioneering and long-continued efforts of Dr. Henry P. Walcott, senior member of the Harvard Corporation, was important and far-reaching. Courses in the various departments had been gradually developed to meet the need for men trained to conserve public health. The field of public health is so broad that it is not strange that this School did not find its origin in any one department. The records show certain important steps in what has been essentially a gradual development. In 1909 a department of Preventive Medicine and Hygiene was established in the Medical School. The degree of Doctor of Public Health was first conferred in 1911. In this same year a department of Sanitary Engineering was inaugurated in the Engineering School. In 1913 a department of Tropical Medicine was formed. In 1918 a Division of Industrial Hygiene with clinical and laboratory facilities was organized in the Harvard Medical School.

Besides these activities which were directly concerned with the training of men for public health work, research was being carried on in the regular departments of the Harvard Medical School in Bacteriology, Pathology, Parasitology, Physiology, Bio-Chemistry, and others, which had perhaps a less direct but very real bearing on the development of the science of public health. On analysis it appeared that there were many activities under the various faculties of Harvard University, besides those of Medicine and Engineering, that had some bearing on public health. Under the Faculty of Arts and Sciences there were many courses, such as those in Physics, Chemistry, Zoölogy, Social Ethics, etc., which formed in certain cases important parts of the training of individuals for work in public health. In addition, there had been established in 1914, under the Faculty of Arts and Sciences, a department of Hygiene, which undertook the supervision of the health of the students in its broadest aspect. This department had collected much data of considerable value in public health.

In 1913 the "Harvard-Technology" School of Public Health was organized. It was under the joint management of Harvard University, and the Massachusetts Institute of Technology. This School continued to operate until the fall of 1922, when, with the inauguration of the new Harvard School of Public Health, the "Harvard-Technology" School, as such, ceased to exist. However, the Massachusetts Institute of Technology continues to coöperate with the Harvard School of Public Health and also offers courses in public health through its department of Biology and Public Health, leading to the several degrees: bachelor, master, and doctor of science, doctor of philosophy, and to the certificate of public health.

As a result of these activities, the University found itself in possession of a substantial nucleus upon which to erect a new School of Public Health of larger scope, and in 1921 received from the Rockefeller Foundation a generous endowment for this purpose, known as the Henry P. Walcott Fund of Harvard University. This gift made it possible: first, to correlate and to enlarge the various departments already existing, such as Preventive Medicine and Hygiene, Bacteriology, Sanitary Engineering, Tropical Medicine, Parasitology, and Industrial Hygiene; second, to create a department of Vital Statistics and to develop new special fields of instruction, such as Public Health Administration, Child Hygiene, Mental Hygiene, Communicable Diseases, and Ventilation and Illumination; and lastly, to purchase a building standing on land adjacent to that occupied by the Medical School in which to house the administration and the various groups concerned with the work of public health.

GENERAL STATEMENT

Purpose

It is the object of the School of Public Health to provide the scientific groundwork of expert knowledge which underlies efficient health administration together with some personal acquaintance with modern public health practice of the best types and thus to prepare students for careers in public health. The School of Public Health offers courses and opportunities to fit students for administrative, teaching, field, or laboratory positions. To this end, lectures, laboratory work, hospital exercises, field surveys, and other forms of instruction are offered by members of the Faculty and by special instructors actively engaged in public health work. Coöperation is also maintained with federal, state, and local health departments, and with hospitals and other agencies. Opportunity is given to those who desire to contribute to knowledge through laboratory research or field investigation.

Facilities

Boston affords unusually good opportunities to study the operation and administration of state and municipal departments of health. Immediately adjacent to the School of Public Health is the Medical School of Harvard University with its well-equipped laboratories and other facilities. In connection with the Port of Boston, the Federal Government maintains maritime quarantine, immigration, medical and other health services. There are several large hospitals available for study and research in the communicable diseases. Abundant material for study of problems of mental hygiene may be found at the Psychopathic Hospital and at the Massachusetts School for Feeble-Minded at Waverley. In Boston are found the health problems of a metropolitan center, and within easy reach, those of large and small towns, as well as of country districts. Boston is an industrial center and its varied industries afford excellent opportunities for the study of industrial hygiene in all its phases. All the usual philanthropic health activities, such as baby hygiene stations, the Red Cross, anti-tuberculosis organizations, district and public health nursing services, and many other similar agencies are active in and around Boston. The School of Public Health is able to take advantage of these and other special opportunities.

Programs of Study

Public Health Education is founded upon a broad knowledge of three fields, Public Health Administration including Epidemiology, Vital Statistics, and Sanitary Engineering. All other subjects constitute specialties.

Students entering the school are divisible into two classes: (1) those coming for some highly specialized type of training and unconcerned with the matter of the certificate or a degree; and (2) those who wish to obtain a certificate or a degree. On presentation of satisfactory evidence of suitable preliminary training the first group will find ample opportunity for work on their particular projects. In dealing with the second group it is the aim of the school to permit as great freedom in individual selection of programs as is consistent with a proper foundation in the three fundamental fields of public health.

Students wishing to become candidates for either the Master or Doctor of Public Health degrees may consider the courses Public Health Administration A, Epidemiology A, Vital Statistics A and Sanitary Engineering A, as representing the minimum requirements in these subjects. Candidates for the two degrees mentioned are in no sense re-

quired to take these courses, but in the final oral examination for the Master's degree and in the preliminary examination for the Doctor's degree, students will be examined upon these three fundamental subjects and upon such further subjects as may have been contained in their approved programs of study. Sample programs of study meeting the requirements for the Master's degree and for candidacy for the Doctorate in Public Health are as follows:

1.* Chief interest — Control of Communicable Diseases.

Courses: 1. Public Health Administration and Epidemiology A.
2. Vital Statistics A.
3. Sanitary Engineering A.
4. Applied Bacteriology and Immunology A.
   a. Lectures on Immunity.
   b. Communicable Diseases A.
   c. Biologic Products.
5. Medical Zoölogy and Tropical Medicine.
6. Child Hygiene A.

2. Chief interest — Industrial Hygiene.

Courses: 1. Public Health Administration and Epidemiology A.
2. Vital Statistics A.
3. Sanitary Engineering A.
4. Physiology A.
   a. Nutrition A.
   b. Ventilation and Illumination A.
5. Industrial Medicine A.
6. Industrial Toxicology A.

3. Chief interest — Medical Zoölogy and Tropical Medicine.

Courses: 1. Public Health Administration and Epidemiology A.
2. Vital Statistics A.
3. Sanitary Engineering A.
4. Medical Zoölogy and Tropical Medicine A.
5. Applied Bacteriology and Immunology A.
6. Communicable Diseases A.

* Candidates for the Doctor's degree deficient in Bacteriology must take Bacteriology I and may then take the course in Medical Zoölogy and Tropical Medicine in the first semester of their second year or the order of taking these two courses may be reversed provided both are taken. Candidates for the Master's degree deficient in Bacteriology are advised to take Bacteriology I and Parasitology.

4. Chief interest — Community Hygiene.

Courses: 1. Public Health Administration and Epidemiology A.
2. Vital Statistics A.
3. Sanitary Engineering A.
4. Hospital Administration A.
5. Mental Hygiene A.
6. Child Hygiene A.

Students deciding upon programs of study should realize that these divisions are merely convenient methods of concentrating their studies and in no sense indicate a rule of procedure in the School. In some instances election of courses without regard to the three fundamental subjects in public health and without regard to the divisions indicated above will be desirable. In such cases the final examination will cover the subjects elected.

Opportunities for Part-Time Work

Students unable to spend a full academic year at the School may come for one or more months and secure courses in some special field, such as Child Hygiene, Mental Hygiene, Physiology, Ventilation and Illumination, Industrial Medicine, Hospital Administration, Vital Statistics, Sanitary Engineering, Nutrition, Industrial Toxicology, Applied Immunology and Bacteriology, and Biologic Products. A glance at the tabular view (page 53) will give an idea of the possibilities of this plan for certain courses. Students are thus able not only to take the intensive courses formally offered during the period that they are at the School, but to fit into their programs other training in special fields by individual arrangements with local laboratories, health agencies, and hospitals.

To full-time students in the School of Public Health all the facilities of the University are available and before deciding on their programs they should consult pp. 45–47 for opportunities that may be especially suited to their particular needs.

ADMISSION REQUIREMENTS

Candidates for the degrees must satisfy the Administrative Board of their academic fitness (1) by a medical degree, or its equivalent, from an approved medical school, or (2) by evidence of adequate training in English and other modern languages, physics, inorganic, organic and biochemistry, biology, anatomy, histology, physiology, pathology, and bacteriology. The training indicated under (2) represents the minimum requirements for entrance to the Harvard Medical School, plus certain

of the fundamental medical sciences of the first two years of the Medical School.

The mere completion of courses is not ordinarily satisfactory evidence of the fitness of a prospective student. The Administrative Board may require further evidence of present ability to utilize the training received, and ability to profit by the courses administered by the School. The medical degree or its equivalent is a prerequisite for the degree of Doctor of Public Health, and Master of Public Health, but not for the Doctor of Philosophy in Hygiene.

Those who do not meet the academic requirements for admission as candidates for degrees may be admitted as students to certain courses and programs of study at the discretion of the Administrative Board.

Opportunities are offered to research students who may desire to investigate special health problems or to make surveys without reference to a degree.

Admission of Women: Women whose previous training and experience are satisfactory may register in this School as special students. As in the past, women may also register for the degree of Doctor of Philosophy in Hygiene through Radcliffe College, taking their work in this School. The University does not confer the degrees of Doctor of Public Health, or Master of Public Health, on women; but they may receive the certificate of Public Health.

Beginning with the academic year 1927–28 a certificate of successful vaccination will be required of all new students allowed to register in any department of the University.

All inquiries and communications should be addressed to the Secretary of the Harvard School of Public Health, 55 Van Dyke Street, Boston, Mass., who will forward upon request catalogues, admission blanks, fellowship applications, and any other information desired.

CERTIFICATE IN PUBLIC HEALTH

Prerequisites: The student must give evidence of having had satisfactory training in modern languages, inorganic, organic and biochemistry, biology, physiology, anatomy, histology, pathology, and bacteriology. As a rule these requirements will be met by students possessing a bachelor's degree plus the first two years in an approved medical school.

The Certificate in Public Health will be granted on satisfactory completion of individual courses in an approved program followed during one academic year in the School of Public Health, and does not require the final general examination essential for the degree of Master of Public Health.

DEGREES

Master of Public Health

Students entering for this degree must present satisfactory evidence of having received the M.D. degree, or its equivalent, from an approved medical school.

Candidacy for the degree of Master of Public Health: Before admission to candidacy for the degree of Master of Public Health, the student will be required to present a program of advanced study covering one year's work, which must be approved by the Committee on Higher Degrees.

Final Examination: The conditions governing this examination have been indicated in the section on programs for study. No student whose course record is unsatisfactory will be admitted to this examination without special permission from the Administrative Board.

Residence: For the degree of Master of Public Health, one academic year must be spent in residence at this University.

Doctor of Public Health

Students contemplating entrance for this degree must present satisfactory evidence of having received the M.D. degree, or its equivalent, from an approved medical school.

Candidacy for the degree of Doctor of Public Health: To establish candidacy the student is required to pass an oral examination of the same type as that required to obtain the degree of Master of Public Health. This examination may be taken without reference to the length of residence as a student. It is intended to provide the assurance that all men receiving the doctorate in Public Health are grounded in the three fundamental subjects and in the field most closely allied to their special interests. If the chief interest of the student is in the control of Communicable Diseases, or in Medical Zoölogy and Tropical Medicine, he must take or have had the equivalent of both Applied Bacteriology and Immunology A and Medical Zoölogy and Tropical Medicine A. Programs of study or statements of the qualifications of the student for examination must be presented to the Committee on Higher Degrees when the student enters the school.

Thesis: For the doctorate in Public Health the student must present a program of independent investigation to the Chairman of the Committee on Higher Degrees. The result of this investigation will form the basis of the thesis which must be presented as one of the final requirements for graduation. *Two copies* of the thesis must be received by the Chairman of the Committee on or before the fifteenth day of December

for degrees conferred in February, and on or before the fifteenth day of April for degrees conferred in June. Each copy must be accompanied by a summary not exceeding 1200 words in length which shall indicate clearly its purposes, methods and results.

Final Examination: On approval of the thesis the student will be required to expound and defend the subject matter of the thesis to the Faculty of the School of Public Health.

Residence: For the degree of Doctor of Public Health, at least one academic year must be spent in residence at this University.

Doctor of Philosophy (in Hygiene)

The degree of Doctor of Philosophy is granted by the University to men, or through Radcliffe College to women, on recommendation of the Division of Medical Sciences of the Faculty of Arts and Sciences in the following special fields:

Anatomy, including comparative anatomy.
Embryology, including microscopic anatomy.
Physiology or comparative physiology.
Biological chemistry.
Pathology or comparative pathology.
Bacteriology.
Pharmacology.
Hygiene.

Properly qualified students in public health have the opportunity to obtain the Doctorate in Philosophy in the field most closely allied to their special interests. This degree is administered by the Faculty of Arts and Sciences of Harvard University, or by Radcliffe College, in accordance with their regulations. Candidates for the degree of Doctor of Philosophy must fulfill certain preliminary requirements, must devote to approved advance studies not less than two years — at least one of which must be spent in residence at this University — and must pass general examinations and present an account of original work in an accepted thesis, before being granted the degree.

Doctor of Medical Sciences

The degree of Doctor of Medical Sciences is administered by the Faculty of Medicine in accordance with their regulations. Further information concerning this degree may be had upon application.

The degrees of Doctor of Philosophy and Doctor of Medical Sciences are designed for those who wish to become productive scholars.

FEES AND EXPENSES

The fees are: For instruction (including laboratory charges except breakage, damage, and loss of apparatus), $300 for each year. The tuition will be charged on term bills issued and payable as follows: one-fourth on the term bill issued and payable September 26th, 1927, one-fourth on the term bill issued November 12th and payable November 30th, one-fourth on the term bill issued January 12th, 1928, and payable January 30th, and one-fourth on the term bill issued April 12th and payable April 30th. Students desiring to take single courses may do so at the rate of $50 for one full month's work, payable in advance.

Bills for miscellaneous charges will be rendered at the time the indebtedness is incurred.

All indebtedness to the University must be paid by all candidates for degrees at least one day before Commencement.

Students who are candidates for degrees in the middle of the academic year must pay all dues to the University at least one day before the day upon which the degrees are to be voted.

A student who leaves during the year is charged to the end of the tuition period in which he leaves, provided before that time he gives the Dean notice in writing of his withdrawal; otherwise he is charged to the end of the academic year or to the end of the tuition period in which such notice is given.

When a student's connection with the University is severed, all charges against him must be paid at once.

Any student whose indebtedness to the University remains unpaid on the date fixed for payment is deprived of the privileges of the University until he is reinstated. Reinstatement is obtained only by consent of the Dean of the Department in which the student is enrolled, after payment of all indebtedness and a reinstatement fee of $10.

A student may rent a microscope from the School upon application to the Administration Office, but the School offers no guarantee that it will keep on hand a sufficient number of such instruments to furnish one for each student.

A deposit of $1 with the Dean will entitle the student to the use of a locker in the School buildings.

STILLMAN INFIRMARY FEE

Not later than October 1 in each academic year, any student may pay to the Bursar the sum of $10 for the maintenance of the Stillman Infirmary; and, on the order of a physician, every student who has taken advantage of this opportunity will be given, in case of sickness, in return

for the fee, a bed in a ward, board, and ordinary nursing for a period not exceeding two weeks in any one academic year.

The School of Public Health provides a physician, Dr. Reginald Fitz, who will give physical examination or medical treatment to students without charge, during his office hours, or at other times by appointment.

BOND REQUIRED OF STUDENTS

Every student is required to file with the Bursar on his entrance to the School a bond of $200 executed by two sufficient bondsmen, one of whom must be a citizen of the United States or by a surety company duly qualified to do business in Massachusetts, or he may deposit with the Bursar two hundred dollars in United States bonds, or fifty dollars as security and pay in advance all sums for which he becomes liable to the University. Money deposited as security is returnable after the issue of the fifth term-bill, one week before Commencement. Every student who boards at the Dining Hall must file a bond for $500. Every student who occupies a room in the Medical School dormitory must file a bond for $500, or must pay in advance the full year's rent of his room. No officer or student of the University is accepted as a bondsman. Blank forms of bonds may be obtained at the Dean's Office or from the Bursar. *Students will be held responsible for the payment of fees until they have notified the Dean, in writing, of their intentions to withdraw from the School and have subsequently received their bond from the Bursar.*

LOCATION AND BUILDINGS

The School of Public Health is located at 55 Van Dyke Street. The building, formerly occupied by the Infants' Hospital, is large and adequate to meet the needs of the growing School of Public Health. It stands on land adjacent to that occupied by the Medical School and in close proximity to the Peter Bent Brigham Hospital, the Children's Hospital, the Collis P. Huntington Hospital, and the new Lying-In Hospital. The Antitoxin and Vaccine Laboratory of the Massachusetts Department of Public Health is within a comparatively short distance of the School. The Boston Psychopathic Hospital is also within a few blocks. The students of the School of Public Health have the privilege of the full use of the Harvard Medical School buildings.

LIBRARIES

The Library of the School of Public Health is combined with the central library of the Harvard Medical School. It is housed in the Administration Building of the Harvard Medical School adjacent to the School of Public Health, and is open from 9 A.M. until 10 P.M. on week days, and from 9 A.M. until 1 P.M. on Saturdays. There are at present 46,931 volumes and 105,396 pamphlets in this library, and 437 current periodicals are kept on file.

Students also have the privilege of the use of the College Library in Cambridge, and of the various departmental libraries belonging to the University, in all of which there are 2,416,500 volumes and pamphlets.

Beside the University libraries, students in this School may use the Boston Public Library on Copley Square, and the Boston Medical Library at No. 8 the Fenway, which contains 133,348 volumes and 91,456 pamphlets, and 650 current periodicals. This very valuable library is open to those who desire to consult medical literature on week days from 9.30 A.M. until 10 P.M., and in July, August and September from 9.30 A.M. until 5 P.M.

FELLOWSHIPS

The School offers a limited number of fellowships of $1200 each. These fellowships are open to students of high scholarship and exceptional ability. Applicants whose experience and training have fitted them to pursue an original piece of research work along lines of Public Health will be given preference. No fellowship will be granted to a student spending less than one academic year at the School.

Applications for fellowships should be filed with the Secretary of the School of Public Health.

ANNOUNCEMENT OF COURSES

BACTERIOLOGY

Hans Zinsser, A.B., A.M., M.D., *Professor of Bacteriology and Immunology.*

Benjamin White, Ph.B., Ph.D., *Assistant Professor of Bacteriology* and *Director of the Division of Biologic Laboratories, Department of Public Health of Massachusetts.*

W. L. Moss, B.S., M.D., *Assistant Professor of Bacteriology and Immunology.*

Hugh Kingsley Ward, M.B., D.P.H., D.A., *Faculty Instructor in Bacteriology and Immunology.*

J. Howard Mueller, Ph.D., *Assistant Professor of Bacteriology and Immunology.*

Francis B. Grinnell, A.B., M.D., *Associate in Bacteriology and Immunology.*

Robert N. Nye, M.D., *Instructor in Bacteriology.*

William A. Hinton, S.B., M.D., *Instructor in Bacteriology* and *Assistant Director of Wassermann Laboratory.*

Elliott S. A. Robinson, M.D., Ph.D., *Instructor in Bacteriology* and *Assistant Director of the Biologic Laboratories, State Department of Public Health.*

The Department of Bacteriology and Immunology of the Harvard School of Public Health, in addition to a course in bacteriology adapted to the needs of medical students, offers a course of lectures and demonstrations in immunity and specific therapy. A course is given once a year for a limited number of advanced students, with particular reference to the needs of public health officers. The work is adapted in each case to the needs of the student applying, by special arrangements with the instructing staff.

Opportunity for diagnostic serological work is offered in the Department in connection with the Wassermann Laboratory of the State of Massachusetts, and provision is made for individual work upon problems of serum production, standardization, etc., under Dr. Benjamin White of the Massachusetts Antitoxin and Vaccine Laboratory.

Advanced work, and opportunities for investigation are available, admission to this type of work depending upon the fitness of the applicant.

Bacteriology 1

Three afternoons a week (Monday, Wednesday, and Friday) for four months (October, November, December, and January).

This course is the regular Medical School course, and is open to students in the School of Public Health who are insufficiently prepared in bacteriology and immunology.

Immunity

Two afternoons a week (Tuesday and Thursday) for three months (November, December, and January).

This course consists of lectures on the principles of infection and resistance with serological demonstrations.

Applied Bacteriology and Immunology A

From February through May, with hours to be arranged later.

This course is given jointly by the Department of Bacteriology and Immunology and the Massachusetts Antitoxin and Vaccine Laboratory. It is intended for students qualified in bacteriology who desire special training in public health laboratory methods and will be given from February through May with hours to be arranged later. The more important communicable diseases will be studied in the Department of Bacteriology from the bacteriological point of view, with laboratory work in the biology of the microörganisms, their relation to disease and immunologic features, together with the correlation of the clinical bacteriological problems. After this, in each case, the method of the production of specific biologic products of diagnostic, prophylactic and therapeutic value will be studied at the Massachusetts Antitoxin and Vaccine Laboratory. Professor Rosenau, of the Department of Preventive Medicine and Hygiene, will collaborate at suitable periods in the course in discussing the correlation of the subject matter of the work with epidemiology and prevention.

Wassermann Laboratory A

This course is planned to give a practical working knowledge of serologic and bacteriologic examinations used in the diagnosis of syphilis and gonorrhea. The major portion of time will be devoted to Wassermann technique and allied reactions. Abundant material is available for the study of the methods taught.

Arrangements as to hours will be made to suit the needs of individual students.

Research in Bacteriology C

Special advanced courses will be offered in Immunology and the Technique of Serum Study, and will be open to a limited number of students.

Opportunity will also be given for properly qualified students to pursue research work along varied lines.

APPLIED IMMUNOLOGY — BIOLOGIC PRODUCTS

BENJAMIN WHITE, Ph.B., Ph.D., *Director of the Division of Biologic Laboratories, Massachusetts Department of Public Health.*

ELLIOTT S. A. ROBINSON, A.B., M.D., Ph.D., *Assistant Director of the Division of Biologic Laboratories, Massachusetts Department of Public Health.*

Biologic Products A

Saturday mornings for two weeks in December and four weeks in January.

This course, which will be given at the State Antitoxin and Vaccine Laboratory will deal with the preparation of biologic products, with a critical discussion of the rationale of the production and use of biologic products.

In addition to the course in Applied Bacteriology and Immunology, given jointly by the Massachusetts Antitoxin and Vaccine Laboratory and the Department of Bacteriology (for details see Bacteriology), opportunities will be afforded to properly qualified students who desire special instruction in the production of biologic products to study and participate in the preparation and testing of serums and vaccines.

Facilities are also offered to candidates for the higher degrees to carry on original work in immunology.

COMPARATIVE PATHOLOGY

ERNEST E. TYZZER, Ph.B., A.M., M.D., *Professor of Comparative Pathology*

MARSHAL FABYAN, A.B., M.D., *Assistant Professor of Comparative Pathology.*

MARSHAL HERTIG, B.S., Ph.D., *Assistant Professor of Entomology.*

DONALD L. AUGUSTINE, S.B., Sc.D., *Assistant Professor of Helminthology.*

HANS THEILER, M.R.V.S., *Assistant in Comparative Pathology.*

Parasitology

Three hours (2–5), three times a week (Monday, Wednesday, and Friday afternoon) for one month (February).

This is the regular Medical School course and is open to students in the School of Public Health.

Medical Zoölogy and Tropical Medicine A

Instruction in this course will be furnished by the combined staffs of the Department of Comparative Pathology and Tropical Medicine. Clinical, epidemiological, and pathological aspects of the subjects under consideration will be presented at appropriate times in connection with the laboratory studies.

The course is divided into four sections of one month each as follows:

Protozoölogy

Three afternoons a week (Monday, Wednesday, and Friday) for one month (October).

Following a brief preliminary survey of the field of Medical Zoölogy, such Protozoa as are considered of medical importance will be taken up with special reference to their identification and life cycles. Together with the theoretical knowledge of the subject acquired through reading or from lectures, the student will be expected to learn certain useful methods for obtaining and preparing material for study and also to become proficient in the identification of the more important parasitic protozoa. Material from human cases, cultures and experimentally infected animals will be utilized for the study of these microörganisms. Seminars will be held at which the student will review certain important contributions to the subject.

Helminthology

Three afternoons a week (Monday, Wednesday, and Friday) for one month (November).

During this period the course is designed to give the student a general knowledge of the biology of the helminths, and to acquaint him with those species parasitic in man and the diseases caused by them. Emphasis will be placed upon the symptomatology, methods of diagnosis and treatment; and the life cycles in relation to the transmission, prophylaxis and control of these parasites. Conferences will be held at which reports are to be given by members of the class on original observations and current literature pertaining to the subject.

Medical Entomology

Three afternoons a week (Monday, Wednesday, and Friday), for one month (December).

These lectures will consist of instruction in the structure, classification, and development of Crustacea, Arachnoidea, Myriopoda, and Insecta known to be concerned or likely to be concerned in the health of man and domestic animals. A study will be made of the various ways in which these organisms are active either as parasites, as carriers of diseases, or as the cause of local injuries or physiological disturbances. Laboratory work will provide practical training in identification, dissection, methods of studying life-histories and habits, and experimental transmission of diseases. Stress will be laid upon furnishing the student with the most useful monographs and reference books. Students may go on further to become acquainted with the extensive special literature so as to be able to carry on independent research work in tropical and foreign countries.

Infectious Diseases

Three afternoons a week (Monday, Wednesday, and Friday), for one month (January).

The course during this month consists of lectures, laboratory work, and clinical instruction.

The most important infectious and other preventable diseases of tropical and foreign countries will be dealt with from the following points of view:

1. The etiology, principles, and modern methods of diagnosis.
2. The methods of transmission and mode of spread.
3. The hygienic problems involved in their control and prevention.
4. The administrative and practical measures to be employed in the control of these diseases under endemic and epidemic conditions.
5. The value of a knowledge of the methods of diagnosis, methods of transmission, prevention, and treatment of the tropical diseases of men and animals in connection with the study, prevention, and treatment of the human infectious diseases in general.

Medical Zoölogy

During the past year research was carried on in the following subjects: intestinal amoeba, intestinal flagellates, bionomics of the hookworm.

PREVENTIVE MEDICINE AND EPIDEMIOLOGY

Milton J. Rosenau, M.D., A.M., *Charles Wilder Professor of Preventive Medicine and Hygiene.*

Lloyd D. Felton, A.B., M.D., D.Sc., *Assistant Professor of Preventive Medicine and Hygiene.*

Benjamin White, Ph.B., Ph.D., *Assistant Professor of Preventive Medicine and Hygiene*, and *Director of the Antitoxin and Vaccine Laboratory, State Department of Public Health.*

W. Lloyd Aycock, M.D., *Associate in Preventive Medicine and Hygiene.*

Joseph W. Schereschewsky, A.B., M.D., *Associate in Preventive Medicine and Hygiene.*

Elliott S. A. Robinson, A.B., M.D., Ph.D., *Instructor in Preventive Medicine and Hygiene*, and *Assistant Director of the Antitoxin and Vaccine Laboratory, State Department of Public Health.*

Howard B. Andervont, B.S., Sc.D., *Instructor in Epidemiology.*

Epidemiology A

One hour (10–11) three times a week (Monday, Wednesday, and Friday), for three months (October, November, and December).

The course consists of lectures, demonstrations, and practical field work. The lectures are designed to give the principles, historic development, and methods of epidemiology with their application to public health administration of the communicable diseases. A number of well-studied epidemics are described and discussed with special reference to their origin, mode of spread and control. The course also includes a consideration of the following subjects: the epidemiology of air-borne, water-borne, milk-borne, and insect-borne infections; the epidemiology of selected representative diseases; disinfection and disinfectants; seasonal prevalence and periodicity; geographic distribution; the laws of epidemics. Each student is required to study and report briefly upon an epidemic. Each student is also required to make a special study of some topic in epidemiology, which is made the subject of a report and discussion at one of the conferences. The field work is done in coöperation with the Massachusetts State Department of Public Health. Each student is assigned to a member of the Department who acts as a tutor, supervises his reading, guides his field work and surveys and helps generally with his problems. The system permits the development of individual interests. Students taking the course are also invited to attend a Journal Club which meets regularly during the academic season.

Epidemiology B

Advanced work. By arrangement with Professor ROSENAU.

This consists in special investigations of a particular disease or problem from both the field and the laboratory standpoints.

Research in Preventive Medicine and Epidemiology C

During the past year research has been carried on in the following subjects: Epidemiology of pneumonia; the virulence of the pneumococcus; isolation of the protective antibody from antipneumococcus serum; immunologic properties of antipneumococcus solutions; studies on soluble specific precipitating substances for antipneumococcus sera; the epidemiology of poliomyelitis; and the epidemiology of cancer. Properly qualified students desiring to do advanced work will be welcomed into any of the lines of research which have been reviewed.

COMMUNICABLE DISEASES

EDWIN H. PLACE, M.D., *Clinical Professor of Pediatrics.*

LEE EDWARDS SUTTON, S.B., M.D., *Assistant in Pediatrics.*

Communicable Diseases A

Two hours (11–1), twice a week (Tuesday and Thursday) for three months (October, November, and December).

This course will be blocked out in such a manner that individual students may take single sections of the work.

Practical experience will be given at the South Department, Boston City Hospital, in the diagnosis, means of isolation, and care of scarlet fever, measles, and diphtheria, supplemented by special exercises in various clinics on pneumonia, typhoid fever, influenza, infantile paralysis, tuberculosis, and venereal diseases.

Research in Communicable Diseases B and C

The South Department of the Boston City Hospital is equipped with 300 beds which are used only by patients with communicable diseases. The two diseases found most frequently in this department are scarlet fever and diphtheria, but all of the other common communicable diseases, such as whooping cough, mumps, measles, chicken pox, tonsillitis, croup, streptococcus sore throats, etc., may be found.

Arrangements may be made for students to observe the work in the department daily, and to spend from one to six months studying and working with one particular disease. Properly qualified men may also be taken on as regular members of the staff on special interneships for a period of 6 or 8 months in order to get a general familiarity with the communicable diseases.

TROPICAL MEDICINE

Richard P. Strong, Ph.B., M.D., S.D., *Professor of Tropical Medicine.*

Andrew Watson Sellards, A.M., M.D., *Assistant Professor of Tropical Medicine.*

George C. Shattuck, A.B., M.D., A.M., *Assistant Professor of Tropical Medicine.*

Joseph Bequaert, Ph.D., *Assistant Professor of Entomology.*

Lemuel R. Cleveland, B.S., D.Sc., *Assistant Professor of Protozoölogy.*

Max Theiler, M.R.C.S., L.R.C.P., D.T.M. and H., *Instructor in Tropical Medicine.*

Jack H. Sandground, S.B., S.M., S.D., *Instructor in Tropical Helminthology.*

Alexander Hamilton Rice, M.D., A.M., *Lecturer on Diseases of South America.*

Albert A. Hornor, A.B., M.D., *Assistant in Tropical Medicine.*

William E. Defks, M.D., A.M., *Lecturer on Tropical Medicine.*

Carlos Chagas, A.M., *Lecturer on Tropical Medicine.*

Afranio do Amaral, B.Sc., B.Litt., M.D., Dr. P.H., *Lecturer on Ophiology.*

Medical Zoölogy and Tropical Medicine A

Three afternoons a week (Monday, Wednesday and Friday), for four months, October, November, December, and January.

Instruction in this course will be furnished by the combined staffs of the Departments of Comparative Pathology and Tropical Medicine. For details see page 26.

Advanced Work in Tropical and Exotic Diseases

For students entering the School with the intention of specializing in public health in tropical countries, a series of courses lasting eight months

is provided. The program followed must include advanced courses in exotic and tropical diseases in:

1. Practical bacteriology and pathology.
2. Practical protozoölogy and helminthology.
3. Practical entomology.
4. Epidemiology (including field work).
5. Clinical, at infectious diseases hospital.

The courses in bacteriology, protozoölogy, helminthology, and entomology are fundamental in connection with the prevention and control of tropical or exotic diseases. Courses relating to tropical climatology, botany, venomous animals and the biological effects of sunlight in tropical countries will also be of advantage and of particular interest to the health officer who desires a more cosmopolitan experience, and are provided for those students desiring them. The need for thoroughly trained men in the field of exotic and tropical medicine is especially urgent.

The program for such advanced students will naturally vary in individual cases and must be approved by the Professor of Tropical Medicine before submission to the Administrative Board.

Special Clinical Work: There are opportunities from time to time for one or more students to attend clinical work for longer or shorter periods at the Boston City Hospital, where there is a service for tropical and foreign diseases under Dr. George C. Shattuck of the Department. There are also opportunities for special clinical work in several hospitals or in the different laboratories situated in the tropics with which Harvard University is connected.

Research in Tropical and Foreign Medicine

The research work in progress includes studies in relation to the Hamilton Rice Expedition in connection with the Department of Tropical Medicine to the Amazon Valley in 1924–25; studies upon certain "free-living" and saprophytic microörganisms and their relation to disease; upon experimental chemotherapy of some of the protozoal and trematode infections; upon the etiology of rat-bite fever and the treatment of general paralysis with *S. morsus muris;* the study of the life-history of mosquito larvae especially with reference to the influence of various chemical substances present in the water; a study of the hymenopterous parasites of ticks and their possible use in the control and eradication of ticks which transmit disease; studies upon yaws with particular reference to immunity; the cholera bacteriophage; upon certain pathogenic Leptospira and their serological relationship; the life-history of Strongyloides intestinalis; and the oxygen tension upon protozoa.

PUBLIC HEALTH ADMINISTRATION

George H. Bigelow, A.B., M.D., Dr. P.H., *Lecturer on Public Health Administration* and *Commissioner, Department of Public Health of Massachusetts.*

Charles V. Chapin, A.B., M.D., Sc.D., *Lecturer on Public Health Administration* and *Superintendent of Health, City of Providence.*

Clarence L. Scamman, A.B., M.D., C.P.H., *Associate in Public Health Administration* and *Deputy Commissioner, Department of Public Health of Massachusetts.*

Herbert L. Lombard, A.B., M.D., M.P.H., *Assistant in Public Health Administration* and *Epidemiologist, Department of Public Health of Massachusetts.*

Edward A. Lane, A.B., M.D., C.P.H., *Assistant in Public Health Administration and State District Health Officer.*

Filip C. Forsbeck, B.S., M.S., M.D., *Research Fellow in Public Health Administration and State Epidemiologist.*

Special lectures in this course during the year 1926–27 were given by the following:

Mr. C. C. Young, *Director of Laboratories, State Department of Health, Michigan.*

Mr. Robert W. Kelso, *Executive Secretary, Boston Council of Social Agencies.*

Dr. W. F. Draper, *Surgeon, United States Public Health Service.*

Dr. Wilson G. Smillie, *International Health Board, Rockefeller Foundation.*

Mr. James A. Tobey, *Institute for Government Research, Washington,* and others.

Public Health Administration A

One hour (9–10), three times a week (Monday, Wednesday, and Friday), for three months (October, November, and December).

Field work — All morning, Saturdays, for three months (October, November, and December), and by special arrangement in May and June.

The course consists of lectures, conferences and field demonstrations. The general aims of public health in controlling communicable and non-communicable diseases are discussed, and it is indicated that one is frequently forced into the field of the unaesthetic and fraudulent. The international, federal, state, municipal and rural aspects of administra-

tion are covered, with the peculiarities incident to each indicated. The students will be divided into groups and each student will be assigned a practical problem for which he will be responsible to the instructor of the group. Field demonstrations will be arranged for Saturdays, October through December; and for a few so desiring special programs in the field will be arranged in May and June. Active coöperation has been effected with the Health Department of the City of Boston, the Massachusetts State Department of Public Health and the activities of the U. S. Public Health Service in and around Boston; also with the City Department of Health of Providence, R. I., Manchester, N. H., Newton, Mass., and others. For the field work there is available a wide variety of workers and their staffs in large and small city health departments, rural boards of health, school medical inspection, communicable disease control, milk and other food handling and inspection, water and sewage plants, industrial medicine, health units, tubercular, venereal and other clinics, health examinations, contagious disease hospitals, etc.

Research in Public Health Administration B

Special opportunities to investigate certain problems in federal, state, or city health administration are afforded to students who are specially qualified.

PHYSIOLOGY

Cecil K. Drinker, S.B., M.D., *Professor of Physiology.*

Lawrence T. Fairhall, S.M., A.M., Ph.D., *Instructor in Physiology.*

Louis A. Shaw, A.B., *Instructor in Physiology.*

Floyd Shelton Daft, B.A., Ph.D., *Assistant in Physiology.*

Physiology A

Two hours (9–11), twice a week (Tuesday and Thursday), for three months (February, March, and April).

The close alliance of physiology as related to the problems of hygiene and of ventilation and illumination renders it desirable that students register for the entire period covered by these two courses. In exceptional cases, however, opportunity may be given to take physiology, or ventilation and illumination separately.

The following subjects will be discussed during the hours devoted to physiology.

Respiration: The physiology of respiration will be reviewed and will lead to a discussion of the effects of high and low atmospheric pressure, carbon monoxide, carbon dioxide, and the commoner non-toxic dusts. The necessary physiological features of rescue apparatus will be demonstrated. Such matters as deep breathing, shallow breathing, resisted breathing, vital capacity, cough and pulmonary edema will be considered in relation to their hygienic significance.

Circulation: The physiology of blood formation and blood destruction will be followed by a discussion of lymph formation and lymph drainage. The general circulation will be reviewed with particular reference to the physiology of cardiovascular breakdown and the methods now available for testing circulatory efficiency.

Fatigue and Repair: The physiological organization of the neuromuscular apparatus will be reviewed and will be followed by a discussion of such subjects as fatigue and repair in physiological processes, practice, exercise, and industrial fatigue.

Hearing and Vision: A brief discussion of the physiology of hearing and vision with special reference to the physiology of tests for acuity of both these senses will be given.

No regular laboratory exercises accompany this course which consists of lectures, demonstrations, conferences, and assignments of reading.

Research in Physiology B

The research activities of the laboratory are concerned with problems of circulatory and muscular efficiency, the evaluation of fibrotic processes due to different dusts and to problems of poisoning by several of the heavy metals.

Properly qualified students will be given opportunities to work in the laboratory provided they can spend at least six months of undivided time.

Nutrition A

Lawrence T. Fairhall, B.S., A.M., Ph.D., *Instructor in Physiology.*

One hour (11–12), three times a week (Monday, Wednesday, and Friday), for two months (December and January).

This is an advanced course which will include lectures, conferences, and assigned reading upon the chemistry and physiology of nutrition, particularly from the view point of large groups of people. Such phases as quality and quantity requirements, vitamins and digestibility in their especial relations to public health will be adequately treated. The con-

ventional presentation of the subject will, however, be subordinated to its more vital and practical aspects. Modern problems in the economics of food production, distribution and utilization, famine conditions and the relation of food and nutrition to certain phases of world politics will receive especial treatment. The course will include visits to various plants handling and producing articles of food.

Properly qualified students will be given an opportunity for laboratory work.

VENTILATION AND ILLUMINATION

PHILIP DRINKER, S.B., Ch.E., *Assistant Professor of Ventilation and Illumination.*

CONSTANTIN P. YAGLOU, A.B., M.E., M.M.E., *Instructor in Ventilation and Illumination.*

R. M. THOMSON, *Assistant in Ventilation and Illumination.*

Ventilation and Illumination A

Two hours (9–11), twice a week (Tuesday and Thursday), for three months (February, March, and April).

The subjects offered will be the following:

1. The measurement of air flow with use of the Pitot tube, Venturi meter, orifice meter, wet and dry gas meters, continuous recording devices, manometers, and katathermometers.

2. The general principles and physics of psychrometry with the determinations of humidity by measuring and recording devices.

3. Air conditioning from the standpoints of design, use, critical examination of equipment, and results obtained.

4. Physiological and practical aspects of air conditioning by direct experimentation with the effects of temperature, humidity, and air movement and the application of these factors to general comfort and ventilation efficiency. Body temperature, metabolism, and comfort at work and at rest under varying atmospheric conditions. Fatigue and efficiency of workers in hot industries as affected by the thermal conditions of the atmosphere.

5. The use of gas masks, respirators, hose masks and oxygen breathing apparatus. The determination of their efficiency, and resistance to breathing.

6. The determination and microscopy of dusts, fumes, and smokes in air by devices such as filters, water scrubbers, Tyndallmeter, ultramicroscope, and electric precipitator. The significance of particle size,

specific surface, and number; the effect of atmospheric conditions on the settlement and aggregation of dusts, fumes, and smokes.

7. Studies of glare, diffusion, speed of vision, visual acuity and their importance in various occupations. Industrial and domestic illumination, determination of optimum illumination intensities as related to eye fatigue.

Research in Ventilation and Illumination B

The investigations now in progress consist in methods of studying dusts, fumes, and smokes in air, their toxic effects, their inhalation retention, and exhalation, and photometric methods for their study while suspended in dry or humid, still or moving air, and the relation of sunlight and atmospheric pollution. In the general field of air conditioning, studies in the effect of various temperatures, humidities, and air movement on circulation, metabolism, and health are also in progress.

A limited number of duly qualified students will be given an opportunity to do research work in any of these fields, or in the selected topics covered in the general course.

INDUSTRIAL MEDICINE

David L. Edsall, A.B., M.D., S.D., *Dean of the Harvard Medical School and the Harvard School of Public Health.*

Alice Hamilton, M.D., A.M., *Assistant Professor of Industrial Medicine.*

Derric C. Parmenter, A.B., M.D., *Instructor in Industrial Medicine.*

W. Irving Clark, A.B., M.D., *Instructor in the Practice of Industrial Medicine.*

Robert S. Quinby, M.D., *Instructor in the Practice of Industrial Medicine.*

Louis R. Daniels, M.D., *Instructor in the Practice of Industrial Medicine.*

Frank E. Schubmehl, M.D., *Assistant in Industrial Medicine.*

Harold W. Stevens, A.B., M.D., *Assistant in Industrial Medicine.*

Noel G. Munroe, A.B., M.D., *Assistant in Industrial Medicine.*

Halstead G. Murray, M.D., *Assistant in Industrial Medicine.*

Erwin H. Schell, S.B., *Instructor in Industrial Operation.*

Industrial Medicine A

Derric C. Parmenter, AB., M.D., *Instructor in Industrial Medicine.* With the coöperation and assistance of special lecturers, instructors, and assistants.

One hour (11–12), twice a week (Tuesday and Thursday), and three hours (9–12), once a week (Saturday), for two months (February and March).

This course is arranged to meet the requirements of students who desire a survey of industrial medicine and methods of industrial practice. It is adapted to the needs of students unable to spend a longer period in Industrial Medicine at the School, and will include demonstrations and lectures on industrial toxicology, industrial and mercantile medical practice, ventilation, illumination, factory sanitation, safety engineering, and compensation. Special effort will be made to correlate the lectures and practical work in this course by means of visits to industrial mercantile establishments and clinics.

Students interested primarily in industrial hygiene will find opportunities for further instruction of both a practical and theoretical nature in Industrial Medicine B.

Industrial Medicine B

Opportunities for research and special study will be open to a limited number of properly qualified students. Special attention will be paid to the solving of practical problems under actual working conditions in industrial establishments.

Industrial Toxicology A

Alice Hamilton, M.D., A.M., *Assistant Professor of Industrial Medicine.*

One hour (10–11), three times a week (Monday, Wednesday, and Friday), for one month (January).

An advanced course which will include lectures, conferences, and assigned reading upon the industrial poisons together with visits to factories and definite studies of field conditions.

VITAL STATISTICS

Edwin B. Wilson, A.B., Ph.D., *Professor of Vital Statistics.*

Carl R. Doering, A.B., M.D., D.Sc., *Instructor in Vital Statistics.*

Vital Statistics A

A1. *One hour (9–10), twice a week (Tuesday and Thursday), for four months (October to January, inclusive).*

A2. *Two hours (2–4), three times a week (Monday, Wednesday, and Friday), for three months (March, April, May).*

The elementary course in Vital Statistics will consist of lectures, recitations, and written work designed to familiarize the student (1) with the general facts already well established in demography, (2) with the methods of graphical representation, (3) with methods of calculation and use of averages, (4) with types of rates and their adjustment, (5) with the basic theory of probability including errors of sampling, (6) with association (Yule) and correlation, (7) with arithmetic and geometric trends, and (8) as time permits with such supplementary special topics, population-theory (Pearl or Knibbs), epidemiological theory (Ross or Brownlee), frequency functions, or analysis of morbidity as may be of especial interest from year to year. So far as is practical students will be encouraged to select a problem of especial interest to them to carry through the course and work up in accordance with the various statistical methods developed.

The course is divided into two parts either of which may, with the consent of the instructor, be taken separately:

A1, descriptive statistics, covering (1), (2), (3), and (4)

A2, inductive statistics, covering (5), (6), (7), and (8).

The first part deals with the collection, arrangement and analysis of statistical data to represent or describe a given situation; the second part discusses the bases of comparability of similar statistical situations and the conditions governing the layout of a survey or investigation so that the data obtained may be of value for inferential purposes.

Text: G. C. Whipple, *Vital Statistics.*
M. J. Rosenau, *Preventive Medicine*, Chap. XXX, by C. R. Doering.

References: Arne Fisher, *Mathematical Theory of Probabilities.*
G. U. Yule, *Introduction to the Theory of Statistics.*

Vital Statistics B

Students who have a satisfactory elementary knowledge of statistics will be directed in their reading of more advanced portions of Vital Statistics, including the theory of frequency curves or other matters listed under (8) in Course A. A knowledge of the elements of the infini-

tesimal calculus though not a prerequisite is desirable, and for certain topics is indispensible. Students who plan to take Vital Statistics B should consult the instructor early to ascertain whether those topics which they desire especially to study require any additional training in mathematics (Biomathematics A or a course in some other school).

Research in Vital Statistics C

Opportunities for special research work in Vital Statistics are open to students whether specializing in Vital Statistics or primarily in some other field of work, who desire to make a statistical investigation of their own connected with public health, or who may desire to coöperate in the general program of statistical research of the department.

Investigations are in progress or planned: with respect to hospital statistics of particular diseases using the large amount of material available in the hospitals associated with the School; with respect to the incidence of diseases with special reference to particular industries in coöperation with Dr. Parmenter and his associates in industrial hygiene or in coöperation with industries which may desire such investigations as a rational basis of the health programs for their employees; with respect to the inter-relations of Vital Statistics and economic or social phenomena; and with respect to those problems of statistics which may be of special and immediate consequence to the State Department of Health.

The Statistical Laboratory

The laboratory for instruction and research in Vital Statistics is housed on the second floor of the building of the School of Public Health on Van Dyke Street, and is equipped with various graphical and mechanical aids including sorting, tabulating and calculating machinery.

Biomathematics A

One hour (3–4) twice a week (Tuesday and Thursday) for two months (October and November), and longer if there is sufficient demand for it.

Lectures on certain aspects of mathematics in their relation to the biological sciences. Arithmetic and algebra, symbolism, permanence of form, exponents, permutations and combinations, binomial theorem, constants and variables, uniform rates, uniformly varying rates (accelerations), integrated rates, areas, limits of quotients and sums, infinitesimals, functions, differentials, derivatives, integrals, law of organic growth (Malthus), logarithms, exponentials, inverse functions, mathematical tables, interpolation, summation, law of unimolecular reaction,

law of autocatalytic or buffer action, environmental inhibition of growth, treatment of experimental data, empirical equations and the determination of natural laws, probability, curve-fitting, the statistical or kinetic view of equilibrium in nature.

Research in Biomathematics B

Opportunities are offered to students who desire to pursue the quantitative and theoretical sides of various biological problems of a non-statistical nature or of a nature statistical in another sense than generally implied in the technical term Vital Statistics.

SANITARY ENGINEERING

Gordon M. Fair, S.B., *Assistant Professor of Sanitary Engineering.*

Melville C. Whipple, *Assistant Professor of Sanitary Chemistry.*

Theodore F. Hatch, B.S., S.M., *Instructor in Sanitary Engineering.*

The Principles of Sanitary Engineering A

Three hours (9–12), three times a week (Monday, Wednesday, and Friday) for four months (February, March, April, and May), at Pierce Hall, Cambridge.

Professor Fair, Professor Whipple, and Mr. Hatch.

A course of lectures and laboratory work arranged especially for students in the School of Public Health. The lectures will cover the following topics: — (*a*) Municipal Sanitation; (*b*) Water Supply and Water Purification; (*c*) Plumbing; (*d*) Sewerage and Sewage Treatment; (*e*) Disposal and Treatment of Wastes; (*f*) Building Sanitation; (*g*) Rural Sanitation; (*h*) Food Sanitation; (*i*) Industrial Sanitation; (*j*) School Sanitation; (*k*) Camp Sanitation; (*l*) Sanitation of Transportation Facilities.

In the laboratory the students will have opportunity to become familiar with the apparatus and instruments used in connection with studies of water purification and sewage treatment; they will be taught how to interpret water and food analyses and how to read engineering plans. In the field they will be taught how to make sketches and reports of engineering works. Arrangements will be made for students to visit water purification works, sewage treatment works and other works of sanitation in the vicinity of Boston, accompanied by an instructor.

Water and Sewage Analysis B

Five mornings a week for one month (February) at Pierce Hall, Cambridge.

Professor WHIPPLE.

A short practical course of lectures and laboratory work for those students who desire to supplement the course in Sanitary Engineering by a further study of water, sewage, and waste analysis. Special attention will be given to the use of analyses in the control of processes of water purification, sewage treatment works, and to the interpretation of analytical results. The topics covered will be Color, Turbidity and Odor of Water; Microscopic Examinations; Bacterial Counts and Tests for Bact. Coli; Dissolved Oxygen and Carbonic Acid; Hardness; Chlorides; the Nitrogen Cycle, etc.

Research in Sanitary Engineering C

There is opportunity for properly qualified students to pursue advanced work in subjects relating to the field of sanitary engineering. During the past year departmental research was carried on in the following subjects: stream pollution; sludge digestion; corrosion of water conduits; algæ control; current practice in disposal of municipal refuse in American cities.

HOSPITAL ADMINISTRATION

JOSEPH B. HOWLAND, M.D., *Lecturer on Hospital Administration.*
LESLIE H. WRIGHT, M.D., *Instructor in Hospital Administration.*

Hospital Administration A

All day, Monday, Wednesday, and Friday, and Saturday mornings, for one month (January).

Instruction will be carried out with the coöperation of experts in administrative work in the hospitals associated with the Harvard Medical School. The course, limited to ten graduates in medicine, is intended to familiarize the student of Public Health with the principles of construction, organization, and administration of hospitals and allied institutions. Lectures will be supplemented by visits to different types of hospitals in and around Boston, and with at least a week of practical work as observers in the departments of the general hospitals of Boston. The work of the students will be reviewed each week at a Round Table exercise.

MENTAL HYGIENE

C. Macfie Campbell, M.S., B.Sc., M.D., *Professor of Psychiatry.*

Henry B. Elkind, M.D., D.P.H., *Assistant in Mental Hygiene.*

With the coöperation and assistance of special lecturers, instructors, and assistants.

Mental Hygiene A

Three hours (9–12), three times a week (Tuesday, Thursday, and Saturday), for two months (April and May).

This course, under the direction of Professor Campbell, offers the student opportunity for becoming familiar with the general field of mental hygiene and with its relations to other aspects of public health.

Mental Hygiene covers not only the traditionally recognized conditions of mental disorders ("Insanity") and defects ("Feeble-mindedness"): it deals also with manifold forms of apparent physical incapacity (including the "psychoneuroses"), with many social problems (prostitution, alcoholism, vagrancy), with maladjustments in home, in school, in industry.

The course will include a review of the fundamental principles of abnormal psychology, of the main types of mental abnormality, of the prevention, management and treatment of the personal and social factors involved in these disorders, and of the organization by the community of the necessary facilities for dealing with these problems.

The course will consist of lectures, clinical demonstrations, visits to hospitals, courts and other organizations, with supervised reading and opportunities for intensive clinical study along special lines (neurosyphilis, school hygiene, delinquency).

Elementary Mental Hygiene

Mondays 4 to 5, for ten weeks, beginning the middle of March.

This is a preliminary course on Medical Psychology given to the first-year medical students, consisting of lectures by Professor Campbell.

Research in Mental Hygiene B

Students holding the degree of Doctor of Medicine who satisfy the professor of their qualifications to do advanced work in Mental Hygiene may spend from one to six months under the guidance of Professor Campbell, working at the Boston Psychopathic Hospital. Here there is exceptional clinical material available and the student will have an oppor-

tunity at the bedside, in the various laboratories and in the out-patient department to study the problems related to mental instability, mental defect and mental disorders, both in adults and in children; the student can become familiar with the psychiatric aspect of such topics as prostitution, alcoholism, delinquency and many other social and public health problems. Those interested in a special topic of research will find the necessary clinical material available, and it will be possible for the student to make use of material in other institutions than the Boston Psychopathic Hospital.

CHILD HYGIENE

Richard M. Smith, A.B., M.D., *Assistant Professor of Child Hygiene.*
Merrill E. Champion, A.B., M.D., C.P.H., *Instructor in Child Hygiene.*
Wilfred L. McKenzie, M.B., *Research Fellow in Child Hygiene.*
With the coöperation of special lecturers.

Child Hygiene A

Two hours (10–12), twice a week (Tuesday and Thursday) for one month (January), and three hours (9–12), three times a week (Tuesday, Thursday, and Saturday) for two months (February and March).

Instruction will consist of lectures and conferences, and in observation of work in the field done under public and private direction. The State Department of Public Health and the Boston City Health Department offer facilities for the study at first hand of well organized Divisions of Child Hygiene. Prenatal clinics, post-natal baby clinics, child welfare clinics, and work among school children will be demonstrated in actual operation. Illegitimacy will be presented through the work of the Florence Crittenton Home. Work for handicapped children will be discussed in connection with visits to the State School at Waverley, the State Hospital School at Canton, and the Judge Baker Foundation. Lectures on other special subjects of child hygiene will be given and visits made to associations in and near the city.

During the year 1926–27 special lectures and instruction were given by the following:

Mr. Edward Allen.
W. Lloyd Aycock, M.D.
Mr. Vernon K. Brackett
Miss Mabel C. Bragg
William P. Cooke, D.M.D.
Harold DeW. Cross, D.M.D.
Robert D. Curtis, M.D.
Robert L. DeNormandie, M.D.
Miss Abigail A. Eliot
Paul W. Emerson, M.D.

John E. Fish, M.D.
Ransom A. Green, M.D.
William Healy, M.D.
George S. Hill, M.D.
Mr. C. C. Jones.
Foster S. Kellogg, MD.
Arman Klein, M.D.
Maynard Ladd, M.D.
Charles McKhann, M.D.
Miss Florence Patterson
Miss Marion McK. Rice.
Lyman G. Richards, M.D.
Mr. Robert W. Rivers.
Alfred P. Rogers, D.M.D.
Mr. Carl Schraeder.
Miss Mabel Strong.
Fritz B. Talbot, M.D.
Douglas A. Thom, M.D.
Miss Hazel Wedgwood.
Benjamin White, Ph.D.
Charles F. Wilinsky, M.D.
Miss Mabel R. Wilson.

Child Hygiene B

For students who have completed Child Hygiene A it will be possible by special arrangement with the head of the department to devote additional time to child hygiene, and to follow the various phases of the work for a longer period of time and at closer range than can be done during the course of Child Hygiene A. Particular attention may be given to School Hygiene with inspection of buildings and detailed observation of medical inspection and physical education. Students may be assigned to hospital and child welfare clinics where they will be given an opportunity to take responsibility and share in the conduct of the work. Arrangements may be made for special study in pediatrics in connection with the Graduate School of Medicine.

Child Hygiene C

RESEARCH

There will be an opportunity for qualified students to investigate any phase of child hygiene. The results of such special studies may be published by the student if approved by the head of the department.

COURSES IN OTHER DIVISIONS OF THE UNIVERSITY

Students in the School of Public Health may take courses in other departments of the University subject to the following conditions: (1) Students must be properly qualified; (2) the consent of the professor in charge of the course must be obtained in each case; (3) the approval of the Administrative Board of the School of Public Health must be procured before one of these courses may be included as a part of a program.

Medical School

The Medical School is very closely affiliated with the School of Public Health, and the courses offered are open to students in this School. Of special interest to students in public health is the very unusual group of courses offered by the Medical School on Tuesday and Thursday afternoons, covering a wide range of subjects. A special bulletin is issued describing these courses. The research facilities of some departments of the Harvard Medical School present valuable opportunities for students in public health.

Courses for Graduates

Graduate courses in the Medical School, most of which last one month, are offered, from October to June, to graduates of Class A medical schools. Another group of short courses is given from June 1st to September 30th. These courses are open also to properly qualified undergraduate students and women. Courses in Surgery and Roentgenology and in Pediatrics have been found especially valuable for public health students.

Dental School

The Dental School is affiliated with the School of Public Health and is situated nearby so that students in this School who are interested in any aspect of dental work may take advantage of the courses offered in that School.

Engineering School

A number of courses are offered in the Engineering School which are closely related to public health. There are also facilities in the Engineering School for students wishing to do advanced research work along public health lines from the engineering standpoint.

Graduate School of Education

Public health students who are planning to teach public health or who wish to make a study of the educational side of public health may take courses in the Graduate School of Education, which offers such courses as The Principles of Educational Psychology and Mental Hygiene, School Hygiene, The Clinical Testing of Children, Problems in Mental and Physical Development, etc.

Graduate School of Business Administration

Students specializing in Industrial Hygiene or Public Health Administration may take special courses in the Graduate School of Business Administration, such as Industrial Management, Business Statistics, etc.

Faculty of Arts and Sciences

Some courses offered by the Faculty of Arts and Sciences, more especially in the Graduate School, have been found useful for students in public health, such as advanced work in Psychology, Chemistry, Zoölogy, Housing, Climatology, etc.

Bussey Institution — Graduate School of Applied Biology

The Bussey Institution offers opportunities for graduate instruction and research in those principles and problems which underlie the practical applications of zoölogy and botany to human welfare.

COURSES IN MASSACHUSETTS INSTITUTE OF TECHNOLOGY

The School of Public Health maintains close coöperation with the Massachusetts Institute of Technology. A group of courses given at the Massachusetts Institute of Technology not listed in this catalogue is open to the students in the School of Public Health, and may, with the approval of the Administrative Board, be included in a general program and will be counted toward a degree.

Catalogues of the various schools listed above will be sent upon application to the Secretary of the Harvard School of Public Health, 55 Van Dyke Street, Boston 17, Mass.

OPPORTUNITIES FOR CLINICAL WORK BY SPECIAL ARRANGEMENT

The Harvard School of Public Health can make arrangements for students desiring special clinical work in the various local hospitals. Clinical courses in Industrial Surgery and in Roentgenology have been arranged at the Massachusetts General Hospital and the Boston City Hospital. Arrangements have also been made for clinical work in Pediatrics at the Boston Dispensary and the Children's Hospital, also in coöperation with the official and unofficial health agencies in health centers, hygiene stations, etc.

OPPORTUNITIES FOR LABORATORY RESEARCH BY SPECIAL ARRANGEMENT

The Harvard School of Public Health can make arrangements for students desiring special laboratory work in the various city, state, and private laboratories.

OPPORTUNITIES FOR FIELD WORK BY SPECIAL ARRANGEMENT

The Harvard School of Public Health can secure opportunities for students desiring special field work not offered in this School by individual arrangements with the State and City Boards of Health, or with the many health agencies that are active in and near Boston.

STUDENTS

Araujo, Eduardo Lins, B.S. (*Gymnasio Da Bahia*) 1906, M.D. (*Faculdade de Medicina da Bahia*) 1912, Bahia, Brazil
Serology.

Behaeddin, F. Bey, M.D. (*Univ. of Constantinople*) 1915, Constantinople, Turkey
General Course.

Borkowski, Victor, M.D. (*Univ. of Dazan*) 1916, Warsaw, Poland
Public Health Administration.

Brutsaert, Paul, Ph.B. (*Lycee Louis le Grand*) 1917, M.D. (*Univ. of Louwain*) 1924, Poperinghe, Belgium
Tropical Medicine.

Büchler, Ludwig, M.D. (*Univ. of Vienna*) 1923, Vienna, Austria
Child Hygiene.

Castaneda, Maximiliano, M.D. (*Escuela Nacional de Bacteriology Medicina*) 1923, Mexico City, Mexico

Concha, Roberto, A.B. (*Colegio Major del Rosario*) 1916,
Vital Statistics. Bogota, Colombia

Davis, Ruth Allen, A.B. (*Mount Holyoke*) 1910, Gardner, Mass.
General Course.

Demaria, Alfred, A.B. (*Liceo de Valparaiso*) 1913, M.D. (*Escuela de Medicina*) 1921, Santiago, Chile
General Course.

Ekanayake, Hector Eugene, L.M.S. (*Ceylon Medical Coll.*) 1906, M.R.C.S., L.R.C.P. (*London*) 1916,
Child Hygiene. Colombo, Ceylon

Englund, Amy, B. S. (*Univ. of Missouri*) 1917, M.A. (*Univ. of Chicago*) 1920, Cambridge, Mass.
Child Hygiene.

Fehnel, James William, B.S. (*Lehigh Univ.*) 1917, Bethlehem, Pa.
Ventilation and Illuminatoin.

Froberger, Robert William, Danville, Pa.
Hospital Administration.

Galbory, Ernest, M.D. (*Hungarian Royal Univ.*) 1921, Okány, Hungary
Child Hygiene.

Greenberg, Boris, M.D. (*Tufts Medical School*) 1918,
Public Health Administration. Beth Israel Hospital, Boston

Hajagos, Ladislas, M.D. (*Royal Hungarian Univ. of Budapest*) 1919, Vacz, Hungary
Child Hygiene.

Hernandez, Xavier Salamanca, M.D. (*Medical Faculty*) 1917, Mexico City, Mexico
Bacteriology.

Huzella, Lewis, M.D. (*Univ. of Budapest*) 1912, Kalocza, Hungary
General Course.

Johnson, Warren, M.D. (*Harvard Univ.*) 1924, New York City, N. Y.
Hospital Administration.

Klamke, Edmond, M.D. (*Univ. of Copenhagen*) 1901, Seattle, Wash.
General Course.

Klenkhart, Karl, M.D. (*Univ. of Vienna*) 1914, Vienna, Austria
General Course.

Lane, Edward Augustus, A.B. (*Williams Coll.*) 1912; M.D. (*Cornell Univ. Medical School*) 1916; Certificate of Graduation, Army Medical School, Washington, 1918; Certificate of Public Health, Johns Hopkins, 1924, Jamaica Plain, Mass.
Communicable Diseases.

Manoliu, Eugenia, M.D. (*Medical Faculty, Jassy*) 1924,
Bacteriology. Jassy, Roumania

Martin de Nicolas y Garcia, Arthur, M.D. (*Madrid Medical School*) 1925, Madrid, Spain
Tropical Medicine.

Mason, Eleanor Dewey, A.B. (*Mount Holyoke*) 1919, A.M. (*Wellesley*) 1921, East Aurora, N. Y.
Vital Statistics.

Michailoff, Alexandre, M.D. (*Univ. of Lyon*) 1907, Sofia, Bulgaria
Bacteriology.

Mis, Franta, M.D. (*Universities of Zagreb and Prague*) 1924, Ljubljana, Jugoslavia
Child Hygiene.

Murray, Veronica F., A.B. (*Bryn Mawr*) 1919, M.D. (*Coll. of Physicians and Surgeons, Columbia Univ.*) 1924, Cambridge, Mass.
Mental Hygiene.

Nadarajah, Varthranather, L.M.S. (*Ceylon Medical Coll.*) 1924, Jaffna, Ceylon
General Course.

Paul, J. Harland, Ph.B. (*Yale Univ.*) 1923, St. Louis, Mo.
General Course.

Robeff, Ivan, M.D. (*Univ. of Lausanne, Switzerland*) 1912, Sofia, Bulgaria
Bacteriology.

Saito, Kiyoshi, A.B. (*Eighth Kotogakko Coll.*) 1916, M.D. (*Tokyo Imperial Univ.*) 1920, Tokyo, Japan
Child Hygiene.

Shopoff, Peter, M.D. (*Univ. of Graz*) 1922, Philippopolis, Bulgaria
General Course.

de Silva, Martinus, L.M.S. (*Ceylon Medical Coll.*) 1924, Hikkaduwa, Ceylon
General Course.

Staneff, Thomas, M.D. (*Univ. of Sofia*) 1924, Lovetch, Bulgaria
Child Hygiene.

Strode, George King, S.B. (*Haverford Coll.*) 1908, M.D. (*Univ. of Pennsylvania*) 1912, New York, N. Y.
General Course.

Tapia, Manuel, M.D. (*Medical School of Madrid*) 1918, Madrid, Spain
Serology and Communicable Diseases.

Thurali Rajah, Samuel, L.M.S. (*Ceylon Medical Coll.*) 1925, Jaffna, Ceylon
General Course.

Varela, Gerardo, M.D. (*Mexico City Medical School*) 1925, Mexico City, Mexico
Bacteriology.

White, William H., M.D. (*Detroit Coll. of Medicine and Surgery*) 1901, M.D.C.M. (*Bishop's Univ.*) 1903, Keene, N. H.
General Course.

Wickremesinghe, Walter Gerald, L.M.S. (*Ceylon Medical Coll.*) 1921, M.R.C.S. (England) 1922, L.R.C.P. (London) 1922. Wellawatta, Ceylon
Child Hygiene.

Wijeyaratne, John, M.R.C.S. (*Univ. of London, England*) 1925, L.R.C.P. (*ibid.*), Kurnegalle, Ceylon
General Course.

DEGREES

On June 24, 1926, Degrees were conferred as follows:

Doctor of Public Health

Keizo Nobechi, M.D. (*Tokyo Imperial Univ.*) 1919, Ph.D. (*ibid.*) 1925.
Special Field, Tropical Medicine.
Thesis, "Studies upon the Bacteriophage of Vibrio Cholerae."

Master of Public Health

Robert Condy, M.B. (*Queen's Univ., Belfast*) 1915, Dr. P. H. (*Dublin Univ.*) 1919.

Geza Sylvester Karacsony, A.B. (*Coll. of Oberschützen*) 1910, M.D. (*Univ. of Budapest*) 1920.

Andrew Martin Samarasinghe, L.R.C.P. and L.R.C.S. (*Univ. of Edinburgh*) 1922, L.M. (*Univ. of Dublin*) 1924.

Kulaverasingham Somaskander, L.R.C.P. and L.R.C.S. (*Univ. of Edinburgh*) 1924, L.F.P. and L.F.S. (*Univ. of Glasgow*) 1925.

TABULAR VIEW

	October	November	December	January
A.M. Monday, Wednesday, and Friday	Public Health Administration A 9–10 Epidemiology A 10–11	Public Health Administration A 9–10 Epidemiology A 10–11	Public Health Administration A 9–10 Epidemiology A 10–11 Nutrition A 11–12	Hospital Administration A 9–12 Industrial Toxicology A 10–11 Nutrition A 11–12
A.M. Tuesday and Thursday	Vital Statistics A1 9–10 Communicable Diseases A 11–1	Vital Statistics A1 9–10 Communicable Diseases A 11–1	Vital Statistics A1 9–10 Communicable Diseases A 11–1	Vital Statistics A1 9–10 Child Hygiene A 10–12
A.M. Saturday	Public Health Administration A 9–1	Public Health Administration A 9–1	Public Health Administration A 9–1	Biological Products A 9–12 Hospital Administration A 9–12
P.M. Monday, Wednesday, and Friday	*Bacteriology I 2–5 Medical Zoölogy and Tropical Medicine A 2–5	Bacteriology I 2–5 Medical Zoölogy and Tropical Medicine A 2–5	Bacteriology I 2–5 Medical Zoölogy and Tropical Medicine A 2–5	Hospital Administration A 2–5 Bacteriology I 2–5 Medical Zoölogy and Tropical Medicine A 2–5

	February	March	April	May
A.M. Monday, Wednesday, and Friday	Sanitary Engineering A 9–12	Sanitary Engineering A 9–12	Sanitary Engineering A 9–12	Sanitary Engineering A 9–12
A.M. Tuesday and Thursday	Physiology A, Ventilation and Illumination A 9–11 Child Hygiene A 9–12 Industrial Medicine A 11–12	Physiology A, Ventilation and Illumination A 9–11 Child Hygiene A 9–12 Industrial Medicine A 11–12	Physiology A, Ventilation and Illumination A 9–11 Mental Hygiene A 9–12	Mental Hygiene A 9–1
A.M. Saturday	Child Hygiene A 9–12 Industrial Medicine A 9–12	Child Hygiene A 9–12 Industrial Medicine A 9–12	Mental Hygiene A 9–12	Mental Hygiene A 9–12
P.M. Monday, Wednesday, and Friday	*Parasitology 2–5	Vital Statistics A2 2–4	Vital Statistics A2 2–4	Vital Statistics A2 2–4

* Medical School Courses.

Advanced courses, special courses, and courses in research are not included in this list. *This tabular view is given for convenience and should not be regarded as representing approved courses in the sense that any combination of these courses necessarily represents a satisfactory program.* Most students, and all students who are candidates for higher degrees, may include in the program courses not listed here, and perhaps courses not formally listed in the catalogue.

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These publications include:—

The Annual Reports of the President and of the Treasurer.

The Annual University Catalogue.

The Annual Catalogues of the College and the several Professional Schools of the University; the Descriptive Pamphlet; the Announcements of the several Departments; etc., etc.